REMARKS

Claims 1-20 are present in this application. Clarifying amendments have been made to claims 1, 3, 11, 17 and 20 to address the concerns raised in the objections and rejections to these claims. The thorough examination and indication of allowable subject matter in dependent claims 10 and 16 are greatly appreciated by the applicants. Reconsideration and allowance for claims 1-20 of the present application as amended are earnestly solicited in view of the following remarks.

Claim 20 of the present application stands objected under 37 CFR §1.75(c) as being of improper dependent for failing to further limit the subject matter of a previous claim. Claim 20 has been amended to be presented in a proper dependent form and it is respectfully requested that this objection be withdrawn.

Claims 3, 11 and 17 stand objected for noted informalities. Clarifying amendments have been made to claims 3, 11 and 17 to address these informalities and it is respectfully requested that this objection be withdrawn.

Claims 1-10 and 17-20 stand rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicants regard as the invention. Clarifying amendments have been made to claims 1 and 17 to address the concerns raised in this rejection. Accordingly, it is respectfully submitted that claims 1-10 and 17-20 are in compliance with the requirements of 35 U.S.C. §112, second paragraph, and it is respectfully requested that this rejection be reconsidered and withdrawn.

Claims 1, 2, 9, 11, 12, 15 and 17-20 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,633,138 to Tokiguchi et al. This rejection is respectfully traversed.

Claim 1 of the present application recites an apparatus for ion implanting a plurality of workpieces comprising an ion source, a holder and a scanner. The holder receives the plurality of workpieces and is arranged to maximize the surface area that is presented to the scan area by the ion source. Claim 17 recites a method for ion implanting a plurality of workpieces comprising the steps of generating an ion beam,

arranging the workpieces on a holder and scanning the ion beam over a predetermined scan area for maximizing the utilization efficiency of the ion beam on the workpieces. Examples of these features are illustrated in Figs. 3(a), 3(b), 4(a) and 4(b) of the present application.

Tokiguchi et al. is relied upon to disclose an ion implanter for implanting a plurality of wafers. Figs. 2a and 2b illustrate a system where wafers 2 are mechanically moved with respect to an ion beam 3. As illustrated by the hatched region in Fig. 2b, ions are implanted regions where there are no wafers. It is also noted that when the wafer diameter is large, this wasteful area becomes even larger. The wasteful area disclosed by Tokiguchi et al. is an example of area to which the apparatus and method in the claims of the present application are directed. Specifically, the claims of the present application provide a holder such that the workpieces may be arranged to maximize the utilization efficiency of the ion beam. Tokiguchi et al. fail to disclose such a holder for receiving the workpieces that are arranged to maximize the surface area present to the ion beam. Tokiguchi et al. identifies the wasteful area problem but does not suggest a solution as claimed in the present application for this problem. Furthermore, Tokiguchi et al. disclose that the ion beam 3 is magnetically swept in a horizontal direction and that the wafers are mechanically moved in a vertical direction. Therefore, Tokiguchi et al. fail to disclose a scanner for scanning the ion beam over the scan area as claimed in the present application. Accordingly, it is respectfully submitted that claims 1, 2, 9, 11, 12, 15 and 17-20 patentably define over Tokiguchi et al. and it is respectfully requested that this rejection be reconsidered and withdrawn.

Claims 1-3, 5, 8, 11-13 and 17 stand rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,346,301 to Robinson et al., claim 4 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Robinson et al. and claims 6, 7 and 14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Robinson et al. in view of U.S. Patent No. 6,608,316 to Harrison. These rejections are respectfully traversed.

Robinson et al. is relied upon to disclose an ion implantation system for implanting ions onto targets 52 and 54. Robinson et al. disclose multiple beam generating units (16 units in the embodiment illustrated in Fig. 8) for the targets disposed

on the drum 56. Each of the beam generating units correspond to a row of targets on the drum. As shown in Fig. 8, a beam generating unit, such as unit 86, corresponds to a row of targets 68, 70, 72 and 74. A ribbon shaped beam is utilized and the targets are rotated by the drum 56 through the ribbon beam. However, Robinson et al. fail to disclose a holder in which workpieces are arranged for maximizing the utilization efficiency of the ion beam. In contrast to the claims of the present application, Robinson et al. merely position the targets on the drum without any regard to their arrangement to the ion beam. Also, Robinson et al. use multiple beam generating units without any regard for maximizing the ion beam utilization efficiency for each unit.

Harrison is further relied upon to disclose an ion implanter having a substrate holder 10 with a plurality of substrate supports 20 for affixing substrates to be doped. The substrate supports 20 are spaced equidistantly from a central hub 22 by a plurality of spokes 24. However, Harrison fails to suggest or imply arranging the workpieces to maximize the ion beam utilization efficiency. As illustrated in Figs. 1a and 1b of Harrison, spaces exist between the substrate supports in which the ion beam will not be implanted to the substrates. Therefore, Harrison fail to cure the deficiencies of Robinson et al. Accordingly, it is respectfully submitted that claims 1-8, 11-14 and 17 patentably define over Robinson et al. and the combination of Robinson et al. and Harrison and it is respectfully requested that these rejections be reconsidered and withdrawn.

In view of these amendments and for all of the above stated reasons, it is respectfully submitted that all of the outstanding objections and erejections have been overcome. Therefore, it is respectfully requested that claims 1-20 of the present application be passed to issue. If any issues remain unresolved, the Examiner is requested to telephone the undersigned attorney. Please charge any additional fees or credit any overpayments to deposit account No. 50-0896.

Respectfully submitted,
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